

Application No. 10/707,999  
Docket No. A4-1719  
Amendment dated August 15, 2005  
Reply to Office Action of June 15, 2005

### REMARKS

In the Office Action, the Examiner reviewed claims 1-25 of the above-identified US Patent Application, with the result that claims 3, 7-12, 15, and 17-25 were withdrawn from consideration due to a election requirement, and the remaining claims were rejected under 35 USC §102 in view of U.S. Patent No. 6,258,185 to Branagan et al. (Branagan). In response, Applicants have amended the claims as set forth above. More particularly:

Independent claims 1 and 13 have been amended to include the requirement that the chips are produced by a machining operation so as to be in the form of particulates, ribbons, wires, filaments, and/or platelets. Support for these amendments can be found in Applicants' specification at, for example, paragraph [0008] (paragraph [0006] according to the USPTO authoring software).

Independent claim 1 has been further amended to clarify the construction of the product if it consists essentially of the chips or of the chips dispersed in the matrix material. Support for these amendments can be found in claim 6 as originally filed, and in Applicants' specification at, for example, paragraph [0008] (paragraph [0006] according to the USPTO authoring software).

Independent claim 13 has been further amended to that the chips

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have nanocrystalline microstructures, consistent with the original limitation in claim 13 that "the chips consist[] entirely of grains with a nominal size of less than 500 nm."

To ensure that claim 1 remains generic to withdrawn claims 3, 7-12, 15, and 17-25, claims 7 and 17 have been amended for consistency with claim 1.

Applicants believe that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-25 are respectfully requested in view of the above amendments and the following remarks.

As noted in §2131 of the MPEP:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ...claim. The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e. identity of terminology is not required. (Citations omitted).

As noted above, independent claims 1 and 13 and their dependent claims 2, 4-6, 14, and 16 were rejected under 35 USC §102(e) as being anticipated by Branagan. Applicants' independent claims 1 and 13 recite a "product consisting essentially of polycrystalline chips . . . having

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nanocrystalline microstructures.” These claims have been amended to clarify that the “chips” are “produced by a machining operation so as to be in the form of particulates, ribbons, wires, filaments, and/or platelets.”

Under the rejection, the Examiner stated

Branagan discloses a steel material having a nanocrystalline scale composite microstructure, col. 4, lines 15-38. The steel material taught can be consolidated, col. 4, lines 39-56 and can have a tabular flake shaped ribbon, col. 8, lines 18-29.

Applicant respectfully disagrees with the above characterization of Branagan's teachings.

First, Applicants claim a “product consisting essentially of polycrystalline chips” (emphasis added), while Branagan does not. Applicants use the term “chip” in accordance with its plain meaning: “a small, thin piece of wood, stone, or other substance, cut or broken off” (emphasis added).

*Webster's New Twentieth Century Dictionary, Unabridged, Second Edition* (1977). MPEP §2111.01 requires that:

The words of a claim must be given their “plain meaning” unless they are defined in the specification.

Accordingly, Applicants' claimed “chips” are in a physical form that results in being “cut” or “broken off” from a larger body as described, for example, in

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paragraphs [0008] and [0009] (paragraphs [0006] and [0007] according to the USPTO authoring software). In contrast, the powders and flakes disclosed by Branagan are not cut or broken off from another substance, but instead are produced directly from a molten metal by, for example, an atomization process. See Branagan at column 4, lines 42-45, column 6, lines 1 and 51, column 8, lines 18-29, 35-39, and 53-56, and column 9, lines 40-43 and 61-63. Therefore, Branagan fails to disclose a "product consisting essentially of polycrystalline chips."

Second, Branagan does not disclose consolidating a nanocrystalline powder to produce a product. Instead, Branagan says that powders of amorphous metal ("metallic glass") are consolidated. See column 4, lines 39-48. Thereafter, devitrification is said to yield a "metal matrix microstructure" (or "nanocrystalline scale metal matrix composite grain structure"). See column 4, line 57-column 5, line 5. All of Branagan's experiments (Examples 1 through 5) involve the production of amorphous powders. While Branagan's Examples 1 through 4 describe heat treating metallic glass powders to cause crystallization and yield a nanocrystalline microstructure, Branagan does not disclose consolidating the experimental nanocrystalline powders to produce a product. Instead, it appears that Branagan's Examples 1-4 were intended to show that an amorphous - to - metastable crystalline - to - nanocrystalline transition occurs (Example 1; column 8, lines 30-39) and to analyze the properties of the

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particles (Example 2: column 9, lines 1-10; Example 3: column 9, lines 49-58; Example 4: column 9, line 66-column 10, line 22). The only teachings in Branagan regarding a consolidated product is the above-noted passage at column 4, lines 39-48, and the process carried out in Example 5, both of which entail consolidation of amorphous powders.

Finally, as with all of the particles produced by Branagan, the "tabular flake shaped ribbon" cited by the Examiner as being disclosed at column 8, lines 18-29, of Branagan, is a metallic glass (amorphous) and not nanocrystalline. See Branagan at column 8, lines 30-39, which describes Figure 9 as being a Differential Thermal Analysis plot showing the "exothermic glass to metastable crystalline and metastable crystalline to crystalline transitions" for the "tabular flake shaped ribbon," which could only be obtained if the ribbon was originally amorphous (metallic glass).

In view of the above, Applicants believe that Branagan does not anticipate independent claims 1 or 13 nor any of their dependent claims under the test for anticipation set forth at MPEP §2131, and therefore respectfully request withdrawal of the rejection under 35 USC §102.

Applicants also believe that Branagan fails to teach or suggest Applicants' claimed invention, in that Applicants' disclosed and claimed product is composed of "chips" and not Branagan's particles formed directly from a melt. Therefore, Applicants believe that Branagan does not teach or remotely

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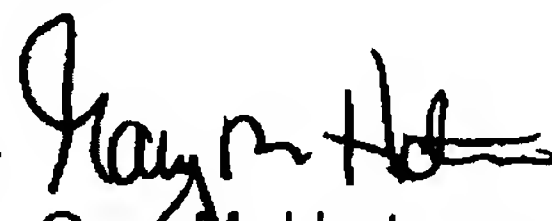
suggest Applicants' claimed invention of a product containing chips produced by machining.

**Closing**

In view of the above, Applicants believe that the claims define patentable novelty over all the references, alone or in combination, of record. Because claim 1 is generic to claims 2-25, Applicants respectfully request reconsideration and withdrawal of the election requirement, and that their patent application be given favorable reconsideration.

Should the Examiner have any questions with respect to any matter now of record, Applicants' representative may be reached at (219) 462-4999.

Respectfully submitted,

By   
Gary M. Hartman  
Reg. No. 33,898

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Hartman & Hartman, P.C.  
Valparaiso, Indiana 46383  
TEL.: (219) 462-4999  
FAX: (219) 464-1166